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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/632,922	08/04/2003	Moungi G. Bawendi	14952.0274 C1 D1/MTT 8096	4946
27890 7590 07/15/2009 STEP TOE & JOHNSON LLP 1330 CONNECTICUT AVENUE, N.W. WASHINGTON, DC 20036				
EXAMINER STEELE, AMBER D				
ART UNIT		PAPER NUMBER		
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/632,922

Applicant(s)

BAWENDI ET AL.

Examiner

AMBER D. STEELE

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Period for Reply -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on March 26, 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3, 12-13, 26-27, 31-33, and 37-39 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3, 12, 13, 26, 27, 31-33 and 37-39 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 04 August 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-649)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(c), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(c) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on January 21, 2009 and March 26, 2009 has been entered.

Status of the Claims

2. Claims 1-39 were originally filed on August 4, 2003.

The amendment to the claims received on April 27, 2006 amended claims 1, 26, and 37.

The amendment to the claims received on October 17, 2006 amended claims 1, 26, and 37 and canceled claims 4-11, 14-25, 28-30, and 34-36.

The amendment to the claims received on December 4, 2007 amended claims 1, 26, and 37.

The amendment to the claims received on June 19, 2008 changed the status identifiers only.

The amendment to the claims received on March 26, 2009 amended claims 1 and 26.

Claims 1-3, 12-13, 26-27, 31-33, and 37-39 are currently pending and under consideration.

Priority

3. The present application claims status as a DIV of 09/397,432 filed September 17, 1999 (now U.S. Patent 6,602,671) which is a CIP of 09/160,458 filed September 24, 1998 (now U.S. Patent 6,617,583) and claims benefit of 60/101,046 filed September 18, 1998.

4. Applicant's claim for the benefit of a prior-filed application under 35 U.S.C. 119(e) or under 35 U.S.C. 120, 121, or 365(c) is acknowledged. Applicant has not complied with one or more conditions for receiving the benefit of an earlier filing date under 35 U.S.C. 121 as follows:

The later-filed application must be an application for a patent for an invention which is also disclosed in the prior application (the parent or original nonprovisional application or provisional application). The disclosure of the invention in the parent application and in the later-filed application must be sufficient to comply with the requirements of the first paragraph of 35 U.S.C. 112. See *Transco Products, Inc. v. Performance Contracting, Inc.*, 38 F.3d 551, 32 USPQ2d 1077 (Fed. Cir. 1994).

The disclosure of the prior-filed applications, application 09/160,458 and provisional application 60/101,046 fail to provide adequate support or enablement in the manner provided by the first paragraph of 35 U.S.C. 112 for one or more claims of this application. Neither U.S. application 09/160,458 nor provisional application 60/101,046 teach alloys. Therefore, the priority date for the presently claimed inventions is September 17, 1999 (i.e. filing date of 09/397,432).

Invention as Claimed

5. A library of compounds wherein each compound in the library is bound to an individual support, each support having associated therewith more than one population of semiconductor nanocrystals, each population having a distinct characteristic spectral emission, wherein each nanocrystal comprises a Group II-VI semiconductor, a Group III-V semiconductor, a Group IV semiconductor, or an alloy of ZnS, ZnSe, ZnTe, CdS, CdSe, CdTe, HgS, HgSe, HgTe, MgTe, GaN, GaP, GaAs, GaSb, InN, InP, InAs, InSb, AlAs, AlP, AlSb, AlS, Ge, Si, or Pb and variations thereof.

Withdrawn Rejection

6. The rejection of claims 1-3, 12-13, 26-27, 31-33, and 37-39 under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement is withdrawn in view of the claim amendments received on March 26, 2009.

New Rejection

Claim Rejections - 35 USC § 112

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

8. Claims 1-3, 12-13, 26-27, 31-33, and 37-39 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. One of skill in the art would not be able to determine the scope of the presently claimed invention. For example, independent claims 1, 26, and 37 require "a library of compounds wherein each compound in the library is bound to an individual support, each support having associated therewith more than one population of

semiconductor nanocrystals, each population having a distinct characteristic spectral emission". Is each library member associated with more than one semiconductor nanocrystal wherein each semiconductor nanocrystal has distinct characteristic spectral emission (i.e. each library member has a distinct characteristic spectral emission) or is each library member associated with one semiconductor nanocrystal with one distinct characteristic spectral emission (i.e. first spectral emission) and also with at least one other semiconductor nanocrystal with a distinct characteristic spectral emission different from the first spectral emission. See Figure 2 of the present specification. Furthermore, it is not clear if the support as presently claimed includes semiconductor nanocrystals or not (i.e. are Quantum dots both the support and semiconductor or is the support a separate structure).

Maintained Rejection

Claim Rejections - 35 USC § 102

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

10. Claims 1, 3, 12, 13, 26, 27, 32, 33, 37, and 39 are rejected under 35 U.S.C. 102(e) as being anticipated by Frankel U.S. Patent 6,096,496 filed June 19, 1997.

For present claims 1, 3, 26, 32, 37, and 39, Frankel teaches combinatorial chemistry library synthesis utilizing tagged beads bound to peptides, nucleotides, and small organic molecules wherein the tag can be semiconductor nanocrystals including Group III-V particularly

GaAs which emits light (please refer to the entire specification particularly abstract; columns 1, 5, 8, 11, 14-17, 21-22, 32).

For present claims 12 and 33, Frankel teaches beads made of cellulose, glass, pore-glass, resin, silica, and polystyrene (please refer to the entire specification particularly column 11, lines 26-43; column 12, lines 57-67; columns 13-17).

For present claims 13 and 27, Frankel teaches polypeptides (please refer to the entire specification particularly column 1, lines 19-37; column 4, lines 8-20).

Therefore, the presently claimed invention is anticipated by the teachings of Frankel.

Arguments and Response

11. Applicants' arguments directed to the rejection under 35 USC 102 (c) as being anticipated by Frankel for claims 1, 3, 12-13, 26-27, 32-33, 37, and 39 were considered but are not persuasive for the following reasons.

Applicants contend that Frankel does not teach each support is associated with more than one population of semiconductor nanocrystals each population having a distinct characteristic spectral emission.

Applicants' arguments are not convincing since the teachings of Frankel anticipates the library of compounds of the instant claims. Frankel teaches a bead (100) surrounding a substrate (190) with ID tags (120) which may be encapsulated (125) and comprises molecular anchoring sites (130a-c) with oligomeric compounds attached (165a-c) directly associated with the bead (please refer to the entire specification particularly Figures 1A and 1B; column 9, lines 59-64; column 13, lines 7-67). Additionally, Frankel teaches that the bead can be made of cellulose, glass, pore-glass, resin, silica (i.e. Group IV semiconductor), polystyrene, the material of the

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identification tagging apparatus (i.e. semiconductor; Si, Group IV semiconductor; GaAs; Group III-V semiconductor; please refer to the entire specification particularly column 11, lines 26-43; column 12, lines 57-67; column 13, lines 1-6). In addition, Frankel teaches multiple ID tags forming a distinct combination code for each bead (i.e. multiple spectral emissions) including various semiconductors (i.e. Si, GaAs, alloys of GaAs, AlInGaP, InGaP, InGaAlP, AlAs, AlGaAs, InSn, Group III-V; please refer to column 5, lines 32-67; column 8, lines 4-32; column 11, lines 44-67; column 12, lines 1-56; column 14, lines 39-44; column 15, lines 1-31; column 16, lines 16-52; column 21, lines 35-67; column 22; column 29, lines 52-67; columns 30-32). Moreover, it is noted that present claims 2, 31, and 38 claim that the first and second semiconductor material are the same or different (i.e. same semiconductor can have distinct characteristic spectral emissions).

It is noted that the limitations “more than one population of semiconductor nanocrystals each population having a distinct characteristic spectral emission” equates to more than one molecule of semiconductor associated with each support. Please also refer to MPEP § 2173.05(g) regarding functional limitations.

New Rejection

Claim Rejections - 35 USC § 103

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

13. Claims 1-3, 12-13, 26-27, 31-33, and 37-39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Frankel U.S. Patent 6,096,496 filed June 19, 1997 and Dabbousi et al., 1997, (CdSe)ZnS Core-Shell Quantum Dots: Synthesis and Characterization of a Size Series of Highly Luminescent Nanocrystallites, J. Phys. Chem. B, 101: 9463-9475.

For present claims 1, 3, 26, 32, 37, and 39, Frankel teaches combinatorial chemistry library synthesis utilizing tagged beads bound to peptides, nucleotides, and small organic molecules wherein the tag can be semiconductor nanocrystals including Group III-V particularly GaAs which emits light (please refer to the entire specification particularly abstract; columns 1, 5, 8, 11, 14-17, 21-22, 32).

For present claims 12 and 33, Frankel teaches beads made of cellulose, glass, pore-glass, resin, silica, and polystyrene (please refer to the entire specification particularly column 11, lines 26-43; column 12, lines 57-67; columns 13-17).

For present claims 13 and 27, Frankel teaches polypeptides (please refer to the entire specification particularly column 1, lines 19-37; column 4, lines 8-20).

However, Frankel does not teach a core-shell structure.

For present claims 2, 31, and 38, Dabbousi et al. teach core-shell quantum dots wherein the core includes CdSe and the shell includes ZnS wherein different colors can be produced based on the thickness of the core and/or shell (please refer to the entire reference particularly the abstract; Experimental Section).

The claim would have been obvious because the substitution of one known element (semiconductor tag without core-shell structure taught by Frankel) for another (i.e. core-shell structure taught by Dabbousi et al.) would have yielded predictable results (i.e. each library

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member would have a different tag with a core-shell structure) to one of ordinary skill in the art at the time of the invention. See *KSR International Co. v. Teleflex Inc.*, 82 USPQ2d 1385 (U.S. 2007).

14. Claims 1-3, 12-13, 26-27, 31-33, and 37-39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Frankel U.S. Patent 6,096,496 filed June 19, 1997 and Weiss et al. U.S. Patent 6,927,069 (effective filing date of July 8, 1999 or September 25, 1997).

For present claims 1, 3, 26, 32, 37, and 39, Frankel teaches combinatorial chemistry library synthesis utilizing tagged beads bound to peptides, nucleotides, and small organic molecules wherein the tag can be semiconductor nanocrystals including Group III-V particularly GaAs which emits light (please refer to the entire specification particularly abstract; columns 1, 5, 8, 11, 14-17, 21-22, 32).

For present claims 12 and 33, Frankel teaches beads made of cellulose, glass, pore-glass, resin, silica, and polystyrene (please refer to the entire specification particularly column 11, lines 26-43; column 12, lines 57-67; columns 13-17).

For present claims 13 and 27, Frankel teaches polypeptides (please refer to the entire specification particularly column 1, lines 19-37; column 4, lines 8-20).

However, Frankel does not teach a core-shell structure.

For present claims 2, 31, and 38, Weiss et al. teach core-shell structures (please refer to the entire specification particularly the abstract and columns 4-6).

The claim would have been obvious because the substitution of one known element (semiconductor tag without core-shell structure taught by Frankel) for another (i.e. core-shell

structure taught by Weiss et al.) would have yielded predictable results (i.e. each library member would have a different tag with a core-shell structure) to one of ordinary skill in the art at the time of the invention. See *KSR International Co. v. Teleflex Inc.*, 82 USPQ2d 1385 (U.S. 2007).

Future Communications

Any inquiry concerning this communication or earlier communications from the examiner should be directed to AMBER D. STEELE whose telephone number is (571)272-5538. The examiner can normally be reached on Monday through Friday 9:00AM-5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Christopher Low can be reached on 571-272-0951. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Amber D. Steele/
Primary Examiner, Art Unit 1639

July 14, 2009